



## Teaching evidence based practice to undergraduate nursing students<sup>☆</sup>



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### ARTICLE INFO

#### Article history:

Received 5 August 2016

Revised 28 April 2017

Accepted 2 June 2017

#### Keywords:

Evidence based practice

Information literacy

Library instruction

Nursing research

Teaching strategy

Undergraduate

### ABSTRACT

Considering the heightened importance of evidence-based practice in healthcare settings, incorporating evidence-based practice into the nursing curriculum, especially in baccalaureate programs is essential because this is a first step to prepare students for their professional role as an RN, and the undergraduate nursing students are the ones who will spend the most time with patients at their bedside providing direct care. Teaching evidence-based practice at the undergraduate level, however, can be challenging. Creative and enjoyable teaching strategies are instrumental in order to promote students' engagement and learning about evidence-based practice. This paper describes useful strategies for teaching evidence-based practice in an undergraduate nursing research course.

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The National Academy of Medicine's Roundtable on Evidence-based Medicine has set a goal that by 2020, 90% of clinical decisions will be supported by up-to-date clinical evidence (National Academy of Sciences, 2009). In response to the heightened importance of evidence-based practice (EBP) in healthcare settings, nursing curriculums have been actively incorporating EBP in both undergraduate and graduate nursing education. However, studies reported low levels of knowledge related to EBP among undergraduate nursing students (André, Aune, & Brænd, 2016; Llasus, Angosta, & Clark, 2014). For example, in an online survey of nursing students' understanding of EBP, 174 students surveyed scored low on their EBP knowledge and engagement in EBP implementation behaviors (Llasus et al., 2014). Students' understanding of EBP is essential for them to utilize it in their clinical practice.

Teaching EBP with undergraduate students is especially important because this is the first step to prepare them for their professional role as an RN, and they are the ones who will spend the most time with patients at their bedside providing direct care. A study reported that undergraduate nursing students experienced a lack of support and opportunity to practice EBP as well as a lack of confidence to utilize EBP independently (Ryan, 2016). Teaching EBP at the undergraduate level, however, can be challenging. Creative and enjoyable teaching strategies are instrumental in order to promote students' learning about EBP (Liou, Cheng, Tsai, & Chang, 2013; McCurry & Martins, 2010). The purpose of this paper is to describe such strategies used to

teach EBP in an undergraduate nursing research course. This EBP project is a group project designed in a Nursing Research Methods course taught in the first quarter of senior year of a baccalaureate program. This paper describes details of the EBP project from group formation to EBP implementation strategies. This EBP project was designed based on the first four steps of 5 A's of the EBP process (ask, acquire, appraise, apply, assess) (Melnyk & Fineout-Overhold, 2005). The four steps were chosen because the project was based on a hypothetical clinical scenario and students were not asked to implement the best intervention. The EBP project consists of two parts: writing a paper (graded) and presenting the paper (award ceremony: not graded) taught by the key faculty and a librarian.

**Group formation and naming:** Students' groups can be formed by faculty or students. The author tries to arrange the groups (4–5 students/group) by the students' clinical sites to help accommodate their meetings for this task among their busy schedule. Students usually take a clinical practicum course along with the research course. Once groups are assigned, each group is asked to come up with its own group name and share with the whole class.

### A paper assignment

1. Asking a question. Forming a question is a first step of EBP process. In this first step, faculty has framed questions in a scenario format instead of having students form questions in order to enhance the clinical relevance of EBP in their daily practice. In a senior synthesis (last quarter of the nursing school), students are asked to develop a question using a Patient or Population,

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Intervention, Comparison, Outcome (PICO) format for a higher level EBP project. Example scenarios are included below. The scenarios are designed to reflect real clinical situations the students may face in their practice and also give them guidance for how to be an independent change agent based on critical thinking. In a first class, one volunteer from each group is asked to randomly select one scenario from a jar at the beginning of the class (a teaching moment to discuss research terminologies, “random selection”, “random assignment”). In this first step of EBP, students are asked to write short problem statements based on the scenario instead of developing a question.

Writing good problem statements is covered in one of the research class sessions using the examples (Box 4.1 Draft Problem Statement on Humor and Stress and Box 4.2 Some Possible Improvements to Problem Statement on Humor and Stress) from the Polit and Beck (2012). The Polit and Beck's guideline on problem statements include six components such as problem identification, background, scope of the problem, consequences of the problem, knowledge gaps and proposed solutions. An example of students' writing based on the scenario below is included in Appendix A.

#### Example scenarios

“You are a nurse at xxx Medical Center ICU. You are taking care of Mr. Vent on mechanical ventilation. The hospital protocol says to do saline instillation suction in mechanically ventilated patients to prevent ventilation-associated pneumonia. Since you are a critical thinker educated at Seattle University, you start to think whether saline suctioning has any benefit for preventing ventilation-associated pneumonia. You do literature searches and plan to present the best evidence to the nurses in your unit.”

“You are a nurse at xxx medical center tele floor. Your client, Mr. Heart is schedule to get a coronary artery bypass graft surgery early next morning. You instruct him to take a bath with skin antiseptics (chlorhexidine solution) before he goes to bed tonight. Since you are a critical thinker educated at Seattle University, you question yourself whether skin antiseptics are really better than any normal soap bathing/showering in preventing surgical site infections from developing. You now have a full of curiosity and do literature searches. You will present the best evidence to the nurses in your unit.”

2. Acquiring evidence. Selecting appropriate evidence-based resources through literature searches is a next important step in EBP. Collaboration with a librarian is a good strategy to help students learn best practices for EBP research and effective use of library databases. A session with a librarian is assigned as one of the class activities.

Outcomes for the session were developed collaboratively between the faculty and librarian to ensure that content is appropriate to the goals and requirements of the EBP project. These outcomes are designed to teach students how to generate a broad list of search terms (vocabulary) from assigned EBP scenarios, effectively search appropriate nursing and healthcare databases and organize sources in a collaborative group space.

In the library session the librarian models how to identify primary search terms using a sample EBP scenario and then shows students how to generate additional vocabulary (synonyms and broader, narrower and related terms) using a thesaurus, internet search or brainstorming within their groups. Next the librarian demonstrates how to use these terms and strategies to search a biomedical database (PubMed) for scholarly literature. Groups are given time to run literature searches on their EBP topics, first in PubMed and then in other nursing/healthcare databases available via the library's Nursing Research Guide (<http://libguides.seattleu.edu/nursing/articles> and [http://](http://libguides.seattleu.edu/nursing/nursingebp)

[libguides.seattleu.edu/nursing/nursingebp](http://libguides.seattleu.edu/nursing/nursingebp)). Finally, students are asked to reflect on the evidence that they have found during their research answering specific questions such as: How do your articles relate to your group's EBP scenario? What specific information will each of them contribute to your systematic review?

Groups use a collaborative work space created using the spreadsheet feature in Google docs to record information about the articles they have found during the literature searches. In one section of the spreadsheet, groups collectively break their EBP scenarios down into search terms and then brainstorm additional vocabulary for searching in databases. Next, during the Article Searching Activity, each group works within a designated space/tab in the spreadsheet to record information about articles found on their assigned EBP scenario. The goal of these exercises is to encourage active participation from all group members and to provide a collaborative space where everyone can continue to share their findings outside of the library session. Also, the faculty member and librarian can follow students' progress throughout the research process and provide help as necessary. The prompts and sample searches used in the spreadsheet can be found in Appendices B and C. Students then evaluate and synthesize the articles found during the Article Searching Activity using the Systematic Review Table (Appendix D).

Groups are encouraged to schedule small group consultations with the librarian in the weeks between the library session and the EBP project deadline to address additional questions. Several students have scheduled appointments and verbal feedback has indicated that these follow up meetings are helpful for review of topics that the librarian is not able to cover in-depth during the library session. The librarian is also able to communicate with the faculty member about repeat questions or issues that come up during the consultations.

3. Appraising evidence. In this section, students are asked to choose a best intervention from the synthesized literature in the “Acquiring evidence” section and state the rationale for use of this intervention. Students are taught the research based on the standard components of a research report (e.g., introduction, purpose of the study, conceptual framework, literature review, methods (sample, setting, instruments, data collection methods, data analysis), results, discussion). An article appraisal assignment (critiquing a research article per the standard of a research report) is included at the end of the course as a summary of the research course. Each group is asked to appraise the article of choice (between two articles in each quantitative and qualitative methodology) following the appraisal guideline. Some examples of the appraisal guideline include questions on appropriateness of study design and sample size, whether instruments have good reliability/validity, study limitations, and reliability of the study findings. In addition, things to consider when appraising evidence such as financial cost for applying the evidence and relevance of evidence to the clinical setting are covered in the class. Students are asked to state the rationale for their intervention choice incorporating the appraisal learned in the class.
4. Applying evidence. This section is an implementation phase. However, since this EBP project is based on hypothetical clinical scenarios, students are not asked to implement the intervention. Instead, they are asked to identify at least three EBP implementation strategies (strategies to promote behavioral changes of nurses by adopting the intervention) based on their literature review using at least two references. Another way is to have students identify how EBPs are implemented in their clinical practicum site by interviewing a nurse manager, a research nurse or EBP Committee of their Adult Health (medical-surgical) clinical site. The latter method can make interviewees being over-utilized by the students. Alternating both approaches can be considered. Implementation strategies in this paper refers to a first step of EBP implementation, having all applicable health care providers in a facility use the evidence before nurses implementing the evidence to health care clients.

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